IN THE CLAIMS:

Claims 18 through 34 were previously cancelled. None of the claims have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as previously amended.

1. (Previously presented) An apparatus for measuring stress at an interface comprising a stress sensor, the stress sensor including:

a sensor body having a central x-axis and a y-axis perpendicular to the central x-axis, opposing first and second portions of the sensor body being resiliently deformable with respect to one another along a direction generally parallel to the central x-axis in response to a shear component of a stress and along a direction generally parallel to the y-axis in response to a normal component of the stress; and

a sensing device configured for generating sensor measurement signals representative of the stress, the sensing device comprising first and second sensor elements each extending between the opposing first and second portions of the sensor body, the first sensor element having a first longitudinal axis intersecting the central x-axis at a first oblique angle α and the second sensor element having a second longitudinal axis intersecting the central x-axis at a second oblique angle $-\alpha$.

2. (Original) The apparatus of claim 1, wherein the opposing first portion of the sensor body of the stress sensor and the opposing second portion of the sensor body of the stress sensor are coupled to one another and extend parallel to and spaced apart from one another along the y-axis, and wherein the central x-axis extends parallel to and equidistant from the opposing first and second portions of the sensor body.

3. (Original) The apparatus of claim 2, wherein the sensor body of the stress sensor further comprises third and fourth opposing portions spaced apart from and opposing one another and each extending in a respective plane parallel to the y-axis, and wherein the opposing third and fourth portions couple the opposing first and second portions to one another to provide a block having a quadrangular cross-section.

4. (Original) The apparatus of claim 3, wherein the quadrangular cross-section of the block is rectangular.

5. (Original) The apparatus of claim 3, wherein the sensor body of the stress sensor further comprises a chamber having a periphery bounded by at least the first, second, third, and fourth portions of the sensor body.

6. (Original) The apparatus of claim 3, wherein:

the block has first and second pairs of diagonally opposed corners;

the first sensor element of the sensing device comprises a first strain gauge having opposite ends respectively coupled proximate the first pair of diagonally opposed corners to extend diagonally across the block; and

the second sensor element of the sensing device comprises a second strain gauge having opposite ends respectively coupled proximate the second pair of diagonally opposed corners to extend diagonally across the block crossing the first sensor element.

7. (Original) The apparatus of claim 1, wherein the first and second sensor elements of the sensing device comprise first and second strain gauges, respectively.

8. (Original) The apparatus of claim 7, wherein the first and second strain gauges comprise first and second optical strain gauges, respectively.

9. (Original) The apparatus of claim 8, wherein:

the first and second optical strain gauges are both configured to undergo equal compression or extension along the respective longitudinal axes thereof representative of the normal component of the stress; and

the first optical strain gauge is configured to undergo compression along the longitudinal axis thereof and the second optical strain gauge is configured to undergo extension along the longitudinal axis thereof, the compression and extension being representative of the shear component of the stress and being of equal magnitude with respect to one another.

10. (Original) The apparatus of claim 1, wherein the stress sensor is configured to measure the shear component of the stress substantially exclusive of the normal component of the stress.

11. (Original) The apparatus of claim 1, wherein the stress sensor further comprises a sensor measurement signal output device configured for outputting the sensor measurement signals generated by the sensing device.

12. (Original) The apparatus of claim 11, wherein the sensor measurement signal output device of the stress sensor comprises an optical-to-electrical converter.

13. (Original) The apparatus of claim 12, wherein the sensor measurement signal output device of the stress sensor further comprises a light source.

14. (Previously presented) The apparatus of claim 11, further comprising:

a first body;

a second body mated to the first body at the interface, wherein the stress sensor is situated at the interface, and wherein at least a portion of the opposing first portion of the sensor body is coupled to the first body and at least a portion of the opposing second portion of the sensor body is coupled to the second body; and

a data-receiving device operatively coupled to the sensor measurement signal output device of the stress sensor and configured for receiving the sensor measurement signals output by the sensor measurement signal output device.

15. (Original) The apparatus of claim 14, wherein the data-receiving device is further configured for determining the shear component of the stress substantially exclusive of the normal component of the stress.

16. (Original) The apparatus of claim 14, further comprising a plurality of the stress sensors situated at the interface.

17. (Original) The apparatus of claim 14, wherein the data-receiving device comprises at least one of a data processor and a data display.

18.-34. (Cancelled)

35. (Original) A method for measuring stress at an interface between first and second mated bodies in response to a stress having a shear component and a normal component, the method comprising:

disposing a stress sensor at the interface between the first and second mated bodies;

resiliently deforming at least a portion of the stress sensor in response to the stress;

measuring a first sensor measurement signal comprising a compressive strain sensor measurement signal portion and a tension strain sensor measurement signal portion, the compressive strain sensor measurement signal portion being equal in magnitude and opposite in direction relative to the tension strain sensor measurement signal portion; and

outputting the first sensor measurement signal.

36. (Original) The method of claim 35, further comprising communicating the first sensor measurement signal to a data-receiving device and determining the shear component of the stress.

37. (Original) The method of claim 36, wherein communicating the first sensor measurement signal to a data-receiving device comprises communicating the first sensor measurement signal to at least one of a data processor and a data display.

38. (Original) The method of claim 35, further comprising communicating the first sensor measurement signal to a data-receiving device and determining the shear component of the stress substantially exclusive of the normal component of the stress.

39. (Original) The method of claim 35, further comprising disposing a plurality of the stress sensors at the interface between the first and second mated bodies.